FAA | AVIATION NEWS

AUGUST 1964

F E D E R A L A V I A T I O N A G E N C Y

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VOL. 3, NO. 4 AUGUST 1964

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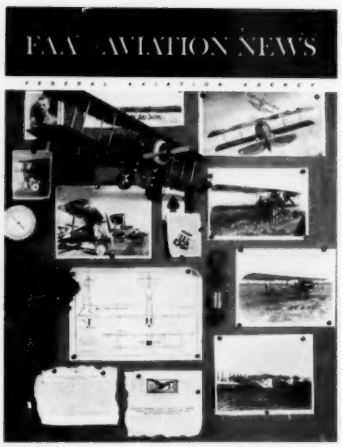


Mementoes of a bygone day mark the 50th anniversary of the outbreak of the war that gave birth to general aviation.
See pages 8-9.

FAA AVIATION NEWS is published monthly by the Office of Information Services, Federal Aviation Agency, Washington, D.C., 20553, in the interest of aviation safety and to acquaint readers with the policies and programs of the Agency. The use of funds for printing **FAA AVIATION NEWS** was approved by the Director of the Bureau of the Budget, Feb. 1, 1963.

Subscription rates: U.S. $1.50 a year, foreign $2.00 a year, single copies 15 cents. Send check or money order (no stamps) as well as address changes to Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

In requesting a change of address, subscribers should include the mailing label from any issue to facilitate the change.

CONTENTS

3 HALABY HOBBY: GRASS ROOTS 'HANGAR FLYING' SESSIONS

4 SECOND SIMULATED CRASH SCHEDULED THIS MONTH

4 AIRWAY ROUTE STRUCTURE MOVIE OUTLINES NEW TWO-LAYER SYSTEM

4 AVIATION MECHANIC SAFETY AWARD ENTRY DEADLINE SET FOR SEPT. 1

5 ADMINISTRATOR GETS PREVIEW OF PLANES PLANNED FOR NEW AIR MUSEUM

5 NEW ILS COMPONENT DEVELOPED TO AID PROBLEM AIRPORT SITES

5 EUROPEAN FLIERS ARRIVE FOR TOUR

6 FLYING CLUB CLINIC CONVENES AT AERO CENTER

6 CAP FLIGHT INSTRUCTORS BEGIN UPGRADING TRAINING IN T-34s

6 MILESTONES IN AVIATION

6 NEW PUBLICATIONS AVAILABLE

7 SCIENTIFIC FIRE TESTS CALLED 'SUCCESS'

7 COCKPIT VOICE RECORDERS WILL BE REQUIRED BY 1966

7 PROPOSAL TO LOWER AREA POSITIVE CONTROL IS WITHDRAWN BY AGENCY

7 NEW-STYLE TOWER FEATURED

8 GENERAL AVIATION SPARKED BY WAR

10 WORLD WAR II FIGHTERS FLY AGAIN

11 SAFETY FIRST: SWINGING A PROP

12 FLIGHT COMPUTER: WIND SIDE FACE

15 LETTERS

HALABY HOBBY—GRASS ROOTS 'HANGAR FLYING' SESSIONS

FAA Administrator Halaby

A unique feature of the N. E. Halaby administration at the FAA has been his frequent "hangar flying" sessions held from coast to coast.

Rarely if ever has the head of a large regulatory agency personally taken so many trips to the field to exchange information through informal, candid question-and-answer sessions with those he regulates—with airmen in the case of the FAA Administrator.

Some of the hangar sessions are helpful primarily for pilots, others for aviation mechanics. However there is always a mixture of both, plus others vitally interested in aviation, such as airport and fixed base operators.

Mr. Halaby's most recent venture was purposely planned for the long 4th of July weekend to give the average pilot a better chance to attend. Held at Mount Ida, Ark., the "hangar flying" session preceded the dedication of Bearce Airport.

A summarized version of a few typical questions and answers follows:

PILOT: *I'm interested in learning about positive control. Will it eventually be extended all the way down to the ground?*

HALABY: Some days we have as many as 75,000 airplanes in the sky. We in the FAA have the job of keeping those airplanes from bumping into each other. But we will never apply positive control on all airplanes all the way down to the ground. We wouldn't want to do it and it is not necessary.

PILOT: *Are there any low-cost DMEs on the market? What about transponders? Any cheap enough for my Aztec?*

HALABY: There are three or four DMEs on the market now, but they are pretty expensive. I think the price will be coming down to below $1,000, but that is up to private industry; FAA does not control prices. A transponder is a black box that transmits the identification of an aircraft at all times; it is a little license number transmitted over the radio. The FAA is trying to develop a transponder cheap enough to put in a small aircraft. However, we do need research and development funds to keep up with all our R&D projects.

PILOT: *Will inactive pilot certificates become invalid?*

HALABY: Some pilot certificates go back to the '20s and '30s; a large number of pilots came home after World War II, secured a ticket, and never took control of an airplane again. These men are still authorized to use this certificate, but only if they have passed a recent medical examination. Also, they are authorized to use their license only if they have had recent experience in the airplane they are about to fly.

We have decided that we should know more about all the pilots who hold licenses—who they are, where they live, how much flying and working they have been doing. We are now trying to work out a simple questionnaire to send to the holders of these licenses, if we can find them, and issue them a new plastic credit card-like certificate.

PILOT: *Will you tell us how we can know if a pilot and plane we hire are qualified?*

HALABY: Anyone who is either about to hire a pilot and airplane, or is simply going along on a ride, has an absolute right to ask to see the pilot's credentials. You have a right to see his license, to see if it is up to date, and his medical certificate, to see if he has had a recent medical exam.

If you are hiring him you are allowed to ask to look at his log book to see how recently he has flown the airplane you are about to get in. You are authorized to look at the airworthiness certificate for the airplane.

Even more important is to know something about the owner and the pilot, and his experience. Most of the accidents in this country are due to pilot error and weather, and a mixture of pilot error and weather.

PILOT: *How can we improve the quality of pilots?*

HALABY: One promising avenue that I am personally exploring is to see if we can get some incentive into the insurance program—where a man who has demonstrated safety consciousness and flying skill can get his insurance premium reduced. There is nothing like a little folding green incentive.

Also, it would be helpful if a pilot could pass an exam on the new regulations and on the procedures in the congested airways. We are hopeful of working something out like that.

A pilot poses a query at last month's "hangar" session in Arkansas.

SECOND SIMULATED CRASH SCHEDULED THIS MONTH

The second FAA scientific crash test in which a work-weary Lockheed *Super Constellation* will be deliberately ground crashed into pole barriers and a man-made hill has been set tentatively for later this month.

The test will be conducted by the Flight Safety Foundation under contract to the FAA at a special test site at Deer Valley Airport, just north of Phoenix.

Like the first test in April which involved the simulated crash of a DC-7 into ground obstacles (see June issue of *FAA Aviation News*), the second test is designed to study the effects and hazards in typical landing and take-off accidents in an effort to reduce fatalities from impact forces and crash fires. It will differ in the type of accidents simulated with emphasis on wing-low impact and hard landing.

Cameras and scientific instruments will record the effect the simulated crash has on the airplane structure and upon the fuel containment cells. Also, secondary tests will be made within the cabin to evaluate existing seat and restraining devices. Instrumented dummies will be used inside the aircraft to measure the crash effects on passengers.

To simulate an actual landing or take-off accident, the test *Constellation* will be accelerated at 120 knots by remote control along a 4,000 foot runway. It will be guided to the crash area by a single-track nosegear guide rail. Before it reaches the end of the guide rail, the airplane will strike pole barriers with its wing to simulate an airplane hitting trees in a crash landing.

After cutting through the poles, the plane will continue down and finally slip off the guide rail. The plane will become airborne momentarily at this point before it comes to a stop in the side of the man-made hill.

The *Constellation* used in this test was purchased from the TWA for $38,000. A surplus military aircraft was rejected when it was determined that the cost of modifications was higher than the purchase of a retired airline transport.

Other agencies participating in the test are the Department of Defense, the Civil Aeronautics Board and the Society of Automotive Engineers.

Airway Route Structure Movie Outlines New Two-Layer System

Airway Route System, an FAA motion picture which describes the new two-layer airway route structure, is now available. Copies of the 16mm, color, 15-minute film may be obtained from any of the FAA Region Headquarters or from the FAA Film Library at the Aeronautical Center, P. O. Box 1082, Oklahoma City, Okla., 73101.

The film describes the new two-layer route system which replaces the existing three-layer route structure which was established in April 1961.

When the two-layer structure is put into operation on Sept. 17, the present intermediate layer between 14,500 and 24,000 feet will be eliminated. The new system has two layers: Generally from 1,000 feet above the surface to 18,000 feet in the lower layer; from 18,000 to 45,000 feet in the upper layer. Navigational guidance will be provided above 45,000 feet.

The new system will decrease workloads of pilots and air traffic controllers. The airways in Alaska and Hawaii will not be affected by the changes.

FEDERAL AVIATION AGENCY

ENTRY FOR AVIATION MECHANIC SAFETY AWARD

INSTRUCTIONS: Use a separate form for each entry. Print or type entries. Submit to the nearest civil maintenance facility or Federal Aviation Agency office.

1. NAME *(If team effort, list names and addresses on reverse side)*
2. FAA MECHANIC (A&P) CERTIFICATE NO. *(If any)*
3. PRESENT MAILING ADDRESS
4. PRESENT EMPLOYER — NAME — ADDRESS
5. EMPLOYMENT LAST CALENDAR YEAR
6. OUTSTANDING CONTRIBUTION MADE *(Give brief but factual description. Drawings, photographs, or other representations may be included to assist the judging committee.)*

(If additional space is required, use the reverse side or attach additional sheets)

7. CONTRIBUTION MADE — ☐ TO GENERAL AVIATION ☐ TO AIR CARRIER — DURING *(Specify calendar year)*

ENTRY SUBMITTED BY: *(If other than entrant)*

NAME — ADDRESS

EMPLOYED BY *(Name and address)* — POSITION HELD

DATE — SIGNATURE

FOR FAA USE ONLY	FOR FLIGHT SAFETY FOUNDATION USE ONLY
INSPECTOR'S COMMENTS	
VERIFIED BY *(Inspector's signature)* — OFFICE IDENT.	
RECOMMENDATION: ☐ STATE AWARD ☐ REGIONAL AWARD ☐ GRAND NATIONAL AWARD	

FAA Form 3338 (3-64) OBSOLETE PREVIOUS EDITION (1210)

Aviation Mechanic Safety Award Entry Deadline Set for Sept. 1

This is the last month to submit entries in FAA's Second Annual Aviation Mechanic Safety Awards Program. The deadline is Sept. 1.

The entry application, FAA Form 3338, included in FAA Advisory Circular 60-2A, outlines the awards program. It may be obtained at airports, maintenance shops and FAA district and maintenance inspection offices.

For convenience, the form reproduced here may be used to enter the awards program. A separate sheet of paper should be used for item six to describe the "outstanding contribution made." Completed forms are to be submitted to the nearest FAA office.

This year, entries may be submitted directly by eligible aviation mechanics, as well as by their supervisors or others familiar with their contributions to aviation safety.

A joint effort of the FAA, the aviation community and the Flight Safety Foundation, the awards program gives recognition to the aviation mechanic.

Medals donated by American Aviation Publications, Inc. will be awarded to national winners.

ADMINISTRATOR GETS PREVIEW OF PLANES PLANNED FOR NEW AIR MUSEUM

Museum Director Hopkins, left, and N. E. Halaby

The Administrator of the FAA was treated to a view of what tomorrow's air-minded Americans will see when the Smithsonian Institution's National Air Museum becomes a reality.

Many of the more than 180 historic and technically valuable aircraft kept under wraps at the museum's storage hangars in Silver Hill, Md., a suburb of Washington, D. C., will be installed in the new museum when it is built.

Taken on a nostalgic visit to aviation's great aircraft by Philip S. Hopkins, director of the museum, N. E. Halaby recalled bygone days as a Navy test pilot when he ferried a Messerschmitt from Newark to the Patuxent Naval Air Station in Maryland and later put the Bell YP-59, the first operational American jet, through its paces. In carrying out his assignment to take the YP-59 to its highest altitude, he flew it skyward in circles until it ran out of gas and was forced to make a dead-stick landing.

The present display at the Smithsonian's temporary museum located in two buildings is limited to 16 aircraft, including the Wright Brothers' *Vin Fiz* and the 1903 *Flyer*, Lindbergh's *Spirit of St. Louis* and Wiley Post's *Winnie Mae*. When the new museum is constructed the aircraft display would be expanded to include approximately 75 aircraft and numerous other exhibits which have been kept in storage because of the lack of space.

Plans for the new National Air Museum were approved in 1958, when the 85th Congress enacted a new law authorizing the building plans and designating the site. Diagonally opposite the FAA headquarters, the site is on Washington's Mall, between 4th and 7th Streets, Southwest, and between Independence Avenue and Jefferson Drive.

The museum received a $1.3 million appropriation last month to complete funding for final building plans and specifications.

A bill still pending before Congress would provide the necessary authorization to build the new museum. It also contains proposals to change the name of the museum to National Air and Space Museum and to increase the size of the advisory board to include representation from the principal government aviation agencies such as FAA, NASA, Army aviation and the Marine Corps.

New ILS Component Developed To Aid Problem Airport Sites

The Capture Effect Glide Slope (CEGS), a new component for the Instrument Landing System (ILS) will be combined with existing ILS at airports where terrain irregularities have interferred with ILS performance.

Developed by an FAA electronics engineer, CEGS provides the pilot with reliable and precise ILS guidance at such problem sites. It also provides more positive indications of altitude when a pilot is below the normal approach path.

CEGS was developed to permit upgrading of ILS performance at airports with irregular terrain features in the approach area and lead to eventual all-weather operation capabilities.

The CEGS is currently in use at Duluth, Knoxville, and at Tempelhof Airport, Berlin, Germany.

Economic benefits realized by the new system include:

- reduced cost to operators who will be able to use the airport under lower weather conditions, thus alleviating the cost of flight diversions, cancellations and delays;
- less expensive site preparation, and
- savings in maintenance and flight inspection time.

European Flyers Arrive for Tour

Arriving at Dulles from Europe aboard a jet, 31 West European pilots crowded around one of the Piper Cherokees *they rented to tour the United States. Their three-week, 6,700 mile, coast-to-coast aerial trip was concluded last month. A second group of European pilots will arrive on Aug. 5. Each group includes pilots from France, Switzerland, Spain, West Germany, and Italy. The unique air tour was organized through the combined efforts of the Aircraft Owners and Pilots Association, Federation Aeronautique Internationale, Air France, Piper Aircraft Corp., and the FAA. A dozen U. S. cities are included on the air tour itinerary. The over-all flying time on the tour will total 52 hours.*

FLYING CLUB CLINIC CONVENES AT AERO CENTER

The First Flying Club Management and Operations Clinic sponsored jointly by the FAA and Flying Clubs International will be held at the FAA Aeronautical Center, Oklahoma City, Aug. 21-22.

Flying club members and officers will convene to discuss problems of managing and operating flying clubs more proficiently and safely, and to promote general aviation through the clubs.

Louis Davis, president of Flying Clubs International, will keynote the clinic with a talk entitled "Flying Clubs—Are They an Asset or Liability?"

The role of flying clubs in general aviation will be discussed by Dr. Leslie Thomason, director of market research and air education for Cessna Aircraft.

Dr. Mervin K. Strickler, Jr., chief of the aviation education division of FAA's Office of General Aviation Affairs, will head the FAA portion of the clinic.

In addition, club officials, members of industry, FAA, fixed-base operators, flight safety officials, educators, insurance men, and lending institutions will participate in the clinic's discussions.

Topics such as buying airplanes, financing, insurance and flight safety will also be discussed during the two-day clinic.

Those who wish to attend the clinic can secure details by contacting Flying Clubs International, 319 Tower building, Washington, D. C. 20005.

MILESTONES IN AVIATION

THE *Silver Dart*, the first powered aircraft to be flown in Canada, was one of four airplanes built by the Aerial Experiment Association, a group which did much to foster aviation and private experimentation in America. The *Dart* was designed by a Canadian, John A. D. McCurdy, seen above at the controls.

The AEA, a group of American and Canadian aviation enthusiasts, decided that one of their planes should initiate the powered flight era in Canada where the group was originally formed. After its beginning in Alexander Graham Bell's summer home in Canada, the AEA had moved to Glenn Curtiss' motorcycle plant in Hammondsport, N. Y., where all four AEA engines and planes were built.

After extensive flights in the U. S., the *Silver Dart* was dismantled and shipped by rail and ship to Baddeck, a tiny maritime village on Cape Breton Island, Nova Scotia, which was McCurdy's home town. McCurdy flew the plane on Feb. 23, 1909.

This flight, almost a mile in length, was also the first made by a British subject in a heavier-than-air machine outside of Britain. It marked Canada's entry into the era of powered flight.

CAP Flight Instructors Begin Upgrading Training in T-34s

Fifty Civil Air Patrol flight instructor pilots will receive specialized FAA upgrading flight training in Beech T-34 *Menter* aircraft starting this month at the FAA's Aeronautical Center, Oklahoma City.

The first group of 10 will begin this intensive training on Aug. 17. Other groups will be scheduled for similar training classes throughout the balance of the year.

Each pilot instructor will receive intensive ground and flight training in the operations of T-34s, which were recently turned over to many CAP units by the Air Force.

After completing the course, each CAP instructor will return to his own unit where he will conduct similar courses for CAP pilots.

NEW PUBLICATIONS AVAILABLE

Some new FAA publications are now available to the public. Those marked "FAA free," are available from the FAA, Distribution Section, HQ-438, Washington, D. C., 20553; those marked GPO are available at the price indicated from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.

The publications include:

- *Airport Service Equipment Buildings.* Advisory Circular 150/6360-1, contains guidance material on the design of buildings to house equipment used in maintaining and repairing runways, taxiways, aprons and ground operational areas which meet the eligibility requirements of the Federal Aid Airport Program; FAA, free.
- *Statistical Study of U. S. Civil Aircraft, January 1962 and January 1963,* contains data on all civil aircraft registered with the FAA on these dates; GPO, 50 cents.
- *Pilot Transition Courses for Complex Single-Engine and Light Twin-Engine Airplanes,* AC-61-9, a course for pilots who plan to be checked out in these types of aircraft; GPO, 15 cents.
- *Instrument Pilot Examination Guide,* AC-61-8; GPO, 40 cents.
- *International Flight Information Manual,* Volume 12; GPO, $1.
- *Student Pilot Guide;* GPO, 15 cents.
- *FAA Air Traffic Activity, Calendar 1963;* GPO, $1.25.
- *Terminal Locations for Planning Purposes, Calendar 1963;* FAA, free.

Proposal to Lower Area Positive Control Is Withdrawn by Agency

A Notice of Proposed Rule Making which would have lowered the floor of Area Positive Control from 24,000 feet to 18,000 feet over a large portion of the country has been withdrawn for further study by the FAA.

Comments received in response to the notice indicated that certain military and general aviation activities would be adversely affected if the proposal were adopted and soaring (glider) operations would be curtailed.

The Notice of Proposed Rule Making would have extended postive control down to 18,000 feet over an area running east to west from New York to California and covering all or parts of 31 states.

Area Positive Control currently is in effect from 24,000 to 60,000 feet over virtually the entire continental United States. Only properly-equipped aircraft operating under instrument flight rules are permitted to fly in this airspace.

NEW-STYLE TOWER FEATURED

While not quite meeting the style of the topless bathing suits, the newest FAA tower does provide for considerable exposure.

This temporary tower, along with a temporary flight service station, was set up and manned by the FAA for the Seventh Annual Antique Fly-in which was held this summer at the Merced (Calif.) Municipal Airport. Some 1,500 aircraft arrived from as far away as New York.

The FAA flight-checking Convair and DC-3 and the antiques, were viewed by the 25,000 who attended the fly-in.

SCIENTIFIC FIRE TESTS CALLED 'SUCCESS'

Twenty-two scientific fire tests, which included the burning of five surplus USAF C-97s, highlighted major FAA experiments held at the Agency's National Aviation Facilities Experimental Center at Atlantic City.

Regarded by the FAA as "very successful," the tests were held in cooperation with the Air Force last month.

Scientific data gathered during the intensive test program is now being studied and evaluated by engineers. A report of their findings is expected to be published later this year.

The tests, which used up to 5,000 gallons of JP-4 fuel, were unique in that they were conducted with full instrumentation to check internal and external thermal environments, air velocity, and toxic gases.

The tests were conducted to: (1) evaluate the best methods of prolonging survival time in crashed aircraft which catch fire; (2) study methods of suppressing fire sufficiently to permit rescue of the occupants; (3) study the use of helicopters to determine whether rotor downwash can disperse flame and cool the fuselage long enough to aid firefighters and permit passengers to escape from the crashed or burning aircraft, and (4) evaluate the use of ground firefighting methods using dry chemicals and foam, separately and with the helicopter.

Cockpit Voice Recorders Will Be Required by 1966

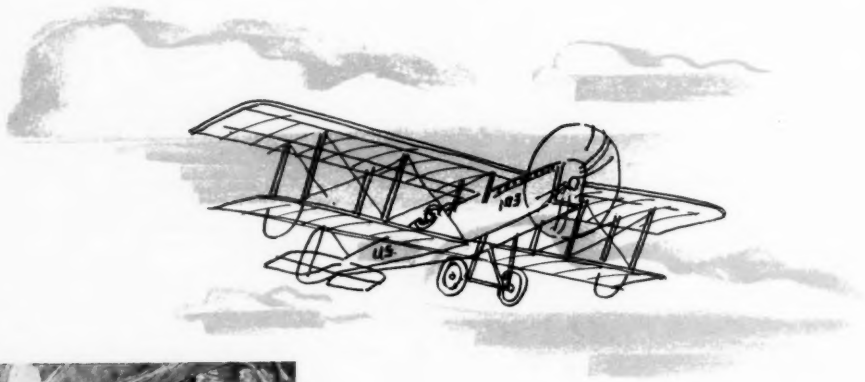
Cockpit voice recorders that will record communications within the cockpit and between crew and ground facilities will be required in large planes operated by air carriers and commercial operators under new rules issued by the FAA.

Designed to aid in accident investigation and prevention, approved cockpit voice recorders will be required by July 1, 1966, in jets and turboprop aircraft weighing more than 12,500 pounds. Pressurized four-engine piston planes will have to meet the requirements by Jan. 1, 1967.

Installation of cockpit voice recorders is a further step toward improving air safety. It supplements the existing requirement for flight recorders on similar aircraft which have been found indispensable in helping investigators determine probable accident causes, thus developing ways to prevent accidents. The flight recorder provides vital data on such critical factors as time, altitude, heading, vertical acceleration and speed.

The voice recorder will provide firsthand information on the flight crews' comments on conditions aboard the aircraft just prior to an accident, or on procedures employed to handle emergencies.

Such information will help the Civil Aeronautics Board—which has the primary responsibilty for determining the probable cause of an accident—the FAA, and the aviation industry in general to develop appropriate corrective procedures and standards.



Spad downs a German *Albatross*. (Painting by J. D. Todahl.)

Golden Anniversary

GENERAL AVIATION SPARK

AUGUST 1964 marks a half century since the outbreak of the first World War which rekindled interest in flying in the United States and laid the foundation for general aviation as we know it today.

Airplane development had languished in the land where it was sired. Legal battles over patent rights, crashes and military shortsightedness had resulted in public indifference and governmental apathy.

The nation's air force in 1910 consisted of only one man. Congress did not even make an appropriation specifically for military aeronautics until 1911. In 1913, when the first U. S. military air unit was formed, only about 50 of the 2,400 pilots in the world—civilian or military—were Americans.

Yet there were many Americans who were anxious to fly in battle when war broke out in Europe. By April 1916 there were so many volunteers from the U. S. in France that that nation authorized formation of a squadron of American fliers —the Lafayette Escadrille. But back home, the Army had only two airplanes and they were declared unfit for service.

The first combat flying unit of the American Expeditionary Force reached Europe in August 1917, trained in Bleriot *Penguins* and *Nieuports*, and went to the front in April 1918 in *Spads*. No American-built plane engaged the enemy.

While less than 1,000 had been built before the war since Kitty Hawk, planes were coming out of U. S. factories in large numbers by the time the Armistice was signed.

In a sense, general aviation was born with the subsequent sale to the public of thousands of war surplus planes at a fraction of their original cost. In addition to the 15,000 Americans who had received wartime flight training, any youngster able to save $300 could buy a plane and fly it away.

While the opportunity for full development was not immediately seized, the first World War brought aviation out of the field of experimentation and within the reach of all.

The government showed an interest in aviation for civil purposes before the war ended when it inaugurated the U. S. Air Mail Service in May 1918. Seven months later the Post Office Department inaugurated service between New York and Chicago in open cockpit planes, mainly American-built DeHavilland DH-4s, familiarly known as "Flying Coffins."

Airplanes were built for the government at the Dayton-Wright plant in Ohio. (Photos, including cover photos, courtesy *Smithsonian Institution* and *National Archives.)*

KED BY WAR

Somewhat offsetting national frustration over the fact that no American warplane flew in combat, and a shakey beginning for air mail service, adventurous young men wearing goggles and scarfs brought new romance to flying with barn-storming exhibitions in stunting, wing-walking and parachute jumping with war surplus DH-4s and Curtiss *Jennies.*

Airline postwar operations made a modest beginning in the U. S. A. in 1919.

Charles Lindbergh flew the first air mail from St. Louis to Chicago in a DH-4 in 1926, just a year before his historic flight across the Atlantic. Lucky Lindy's "first" was only one in a series of historic aviation accomplishments studding the late '20s, the '30s and early '40s, but it was an event that provided special impetus for public support and private capital. With the advent of World War II, the resulting impact on civilian aviation after 1945 far exceeded that following the first World War. And aviation has been growing ever since.

Today, more than 365,000 civilian pilots hold FAA licenses and almost 90,000 civilian aircraft are registered.

Lindbergh carried mail in this type DH-4 from St. Louis to Chicago.

War-surplus Curtiss *Jennies* were widely used by barn-storming pilots.

A P-51, "South Alberta Squadron," represents Canada in CAF.

World War II Fighters Fly Again

An "Air Force" which grew out of a rebellion against red tape now flies the skies over Texas under the name "Confederate Air Force."

When restrictions prevented the purchase of surplus World War II fighter planes for "private" use and sent most of the fighters to extinction as they were melted down for aluminum ingots, a group proceeded to buy the planes that today make up the flying CAF. The planes and parts cost about $102,000.

Beginning with a P-51 *Mustang* in 1957, Lloyd P. Nolen, former military flight instructor and now operator of the Mercedes (Texas) Flying Service, and a group of air-minded friends launched the CAF at Rebel Field in Mercedes. A dispute arose when devotees of the Navy's *Bearcat* challenged the performance of the *Mustang* and soon a second plane was added to the CAF.

Today nine veteran World War II fighters and three T-6 *Texans,* which serve as the training squadron, make up this collection of rare "flyable" fighters. The fleet now consists of a P-40 *Warhawk,* one of two flyable models left; a *Corsair* which was rescued from a junk dealer who planned to sell it to an Arizona smelter; a P-38 *Lightning* which was purchased from a California aerial survey firm; a *Wildcat* and *Hellcat* which were picked up from private owners in Florida and California; a P-47 *Thunderbolt* which came fully armed when it was acquired from the Nicaraguan Air Force, and a P-63E *Kingcobra* from the Honduras Air Force. The most recent acquisition, a P-39 *Aircobra,* was dismantled when it was purchased and is now being reconstructed.

The pilots of the CAF, headed by the imaginary Col. Jethro E. Culpepper, are all "colonels" and wear a distinctive grey uniform and revel in their motto, "Semper Mint Julep."

The group is now seeking three foreign aircraft, a British *Spitfire,* a German *Messerschmitt* ME-109, and a Japanese *Zero* to complete their collection of WW II greats.

World War II fighter planes have been preserved in top flying condition by the Confederate Air Force with the assistance of FAA inspectors at San Antonio.

SAFETY FIRST

Swinging a Prop

While the need to use muscle to swing a propeller to start an airplane has been on the wane since the implementation of the electric starter, the propeller hazards that have long harassed general aviation pilots still remain. Hardly a month passes without someone being injured or killed *(back cover)*.

As long as this situation exists, anyone handling a propeller should know how to swing it safely; ignorance can result in disaster.

A recent accident report by the Civil Aeronautics Board, for example, relates how a pilot was killed when he apparently slipped into the path of the blade. When the engine did not start on the first pull, the pilot repositioned the propeller for another try. The engine fired a few times and the pilot was fatally injured by the propeller.

Investigation revealed that the pilot had been standing on a slippery grass surface that was covered with heavy dew.

A cardinal point in prop safety is:

It takes two to swing a propeller! One qualified person, preferably a pilot, should be in the cockpit and another experienced person, a pilot or mechanic, should swing the propeller.

Other important suggestions are:

- The prop swinger should be on firm ground—not on wet grass, mud, grease or loose gravel where a slip or fall could mean a fatal or serious injury.
- The prop swinger should call out, "gas on, switch off, throttle closed, brakes on—chocks in place," if no brakes—and wait for a reply before touching the propeller. The pilot in the cockpit will check each command as given and then repeat the command. The switch and throttle must not be touched again until the person swinging the propeller calls, "contact." The pilot will repeat "contact" and *then* turn on the switch—never before calling "contact."
- If the engine does not start on the first pull of the propeller, the prop swinger should step back and call "switch off." The propeller should not be touched again until the switch is actually turned off and the pilot in the cockpit calls "switch off."
- Don't touch the propeller or even go near it unless you take all the necessary safety precautions.
- As you swing the propeller, step away as it is pulled down. Stand close but not too close.
- Move the propeller blade downward by pulling with the palms of the hands. (Look at the hands in the photograph.) If you push the blade upward, or grip it tightly, backfiring may break your fingers, or draw your body into the path of the blades.
- After removing chocks from in front of the wheels do not walk into the spinning propeller.

Proper training from a qualified instructor in the waning art of swinging a propeller takes only a few minutes but can save a life.

Flight Computer:

Wind Face Side

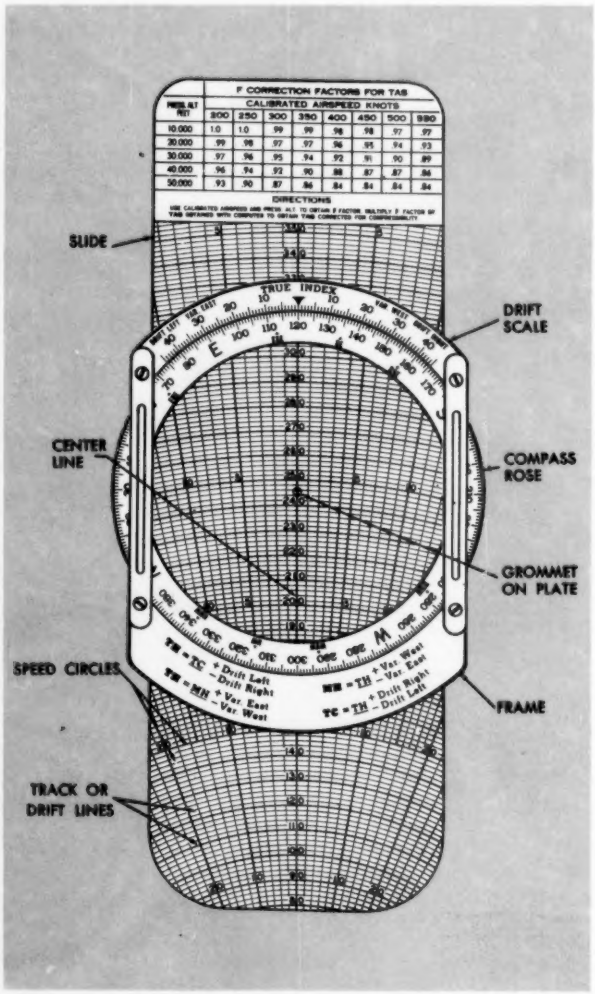


Illustration #1—Wind side of the flight computer

This is the fifth of a series of articles on aerial navigation. Last month's installment dealt with the slide rule side of the flight computer.

The second side or wind face of the flight computer is used by the pilot to solve wind triangle problems during preflight planning and during flight. This wind triangle is made up of three sides, or vectors, involving six quantities. The three vectors are: the ground vector—true course and ground speed; the air vector—true heading and true air speed, and the wind vector—wind direction and wind velocity. The direction in each instance is measured as an angle from true north, and the length is measured as miles, knots or kilometers per hour. Knowing any four of the six quantities, a pilot can determine the other two on the computer.

The wind face of the computer has three component parts: (1) a frame, (2) a transparent circular plate which rotates in the frame, and (3) a slide or card which can be moved up and down in the frame under the circular plate *(illustration #1)*.

The frame has a reference mark, the true index and a drift scale which is graduated 45° to the left and 45° to the right.

The circular plate or disk has an outer rim or compass rose which is graduated from 0 to 360°. The center portion of the disk is made of frosted plastic on which pencil marks can be made. A small black circle or grommet is at the center of the disk.

The slide or card has two sides—a low-speed side and a high-speed side, generally from 20 to 300 on one side and from 200 to 700 on the other. The slide is made up of two sets of imprinted lines *(illustration #2)*. The horizontal or concentric circles—whose center is at the very bottom of the slide—are called "speed circles." They are used to measure speed for the wind triangle—wind speed, ground speed and true airspeed. Each arc or speed circle represents 2 mph (or knots). At 10-mile intervals a heavier "speed circle" appears. It is numbered (*e.g.* 160, 170, 180, etc.) for easier reading.

The second set of lines—track or drift lines which intersect the "speed circles"—are a series of converging straight lines which meet at the center of the concentric circles (at the bottom of the grid). The center line of this group is the

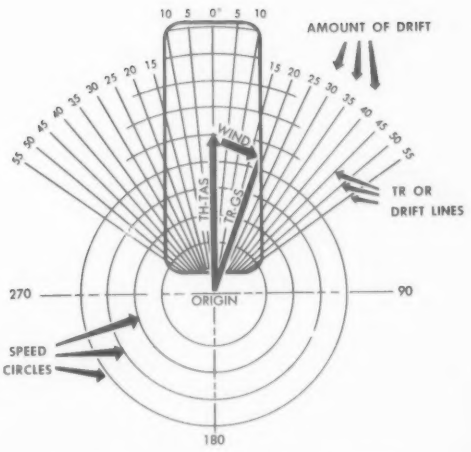


Illustration #2—How computer is constructed

"true heading" line. The other lines are true course lines, since they show the number of degrees by which the true course differs from the true heading. Below 150, each line represents 2° and heavy lines appear and are numbered at each 10° interval. Above 150, each line represents 1° and heavy lines appear at 5° intervals.

One of the best ways to understand the use of the computer is to solve some of the problems facing a pilot.

Three general problems can be solved using the wind face of the computer.

Find True Heading and Ground Speed

The first type problem, determining the true heading and ground speed when the true course, true airspeed and wind direction and velocity are known, is one most private pilots will encounter. This type arises during preflight and during flight when a pilot needs to determine a true heading to fly and a ground speed upon which he can compute an estimated time of arrival.

Sample problem. The pilot measures his true course (TC) on an aeronautical chart with a plotter and finds it to be 230°. He plans to cruise at a true airspeed (TAS) of 220 mph. The winds-aloft forecast gives the wind direction (WD) and wind velocity (WV) at his proposed cruising altitude as 270° and 50 mph. What is his ground speed (GS) and true heading (TH) for this flight?

Solution using the computer:

1. Set WD 270° under the true index marker *(illustration #3).*

2. Draw the wind vector down the center line from the grommet, making its length along the speed scale correspond to the wind velocity, 50 mph.

3. Set the TAS 220 mph under the grommet.

4. Set the TC 230° under the true index.

At this point, the wind triangle is set up incorrectly because the TC is set under the true index rather than the TH. However, since you do not know the TH, you must use the TC at a first approximation of the TH. This will give you a first estimate of the drift angle, which you can apply to the TC to get a more accurate idea of the TH. Therefore:

5. Determine the drift angle, 10° left, on the approximate heading 230° by counting the number of degrees from the center line to the head of the wind arrow.

6. Apply the drift correction +10° to the TC 230° to obtain a second approximation of the TH 240°. If the drift angle is right, the drift correction is minus; if it is left, the drift correction is plus.

7. Set the second approximate heading, 240°, under the true index. Read the drift angle for this heading, 8° right.

The wind triangle is still incorrect. To be correct, the drift angle which you read at the head of the wind vector must equal the difference between the TC and TH which is set under the true index. The drift angle is 8° left, while the

difference between TC and the indicated TH is 10° left.

8. Jiggle the compass rose until the drift angle equals the difference between TC and TH. In this example you will find that the correct drift angle is 8½° left. Now the wind triangle is correctly set.

9. Read the TH as 238½° under the true index.

10. Read the GS as 179 mph on the speed circle passing through the head of the wind vector.

Find True Course and Ground Speed

Another wind problem arises when a pilot can determine his TH and TAS by reading the flight instruments and when he knows the wind direction and velocity either from weather forecasts or from his determinations during flight and wants to find his TC and GS.

Sample problem. A pilot determines his TH as 100°, his TAS as 210 mph, and the wind as 020° at 25 mph. What is the TC and the GS?

Solution using the computer:

1. Set the wind direction, 020° under the true index *(illustration #4)*.

2. Draw the wind vector from the grommet down the center line making its length 25 units along the speed scale to conform with the wind velocity of 25 mph.

3. By rotating the compass rose, set TH of 100° under the true index.

4. Slide the card up or down until TAS of 210 mph is under the grommet. You have now constructed the wind triangle on the computer. The TC-GS, or ground vector, lies along one of the radiating track lines with its arrow at the head of the wind vector. Now read the answers.

5. Read GS of 208 mph on the speed circle which passes through the head of the ground vector.

6. Read the drift angle, 7° right, by counting the number of degrees from the center line to the TC-GS vector, that is, to the head of the wind vector.

7. Determine TC of 107° by applying drift angle to TH. If TC is right of the center line it is greater than TH; so drift angle must be added to TH. If TC is left of the center line, drift angle must be subtracted from TH.

Find Wind Direction and Velocity

The third type of wind problem arises when you can obtain your TH and TAS by reading the flight instruments and TC and GS either by measuring the direction and distance between two established positions of the airplane or by determining drift angle by reference to the ground.

Sample problem. The TH is 270°, the TAS is 180 mph, the TC is 280° and the GS is 165 mph. What is the wind direction and velocity?

Solution using the computer:

1. Set TH of 270° under the true index *(illustration #5)*.

2. Set TAS of 230 mph under the grommet.

3. Find the drift angle, 10° right, by comparing TH of 270° with TC of 280°. If TC is greater than TH, drift is right; if it is less, drift is left. Find the appropriate track line on your computer 10° right of center.

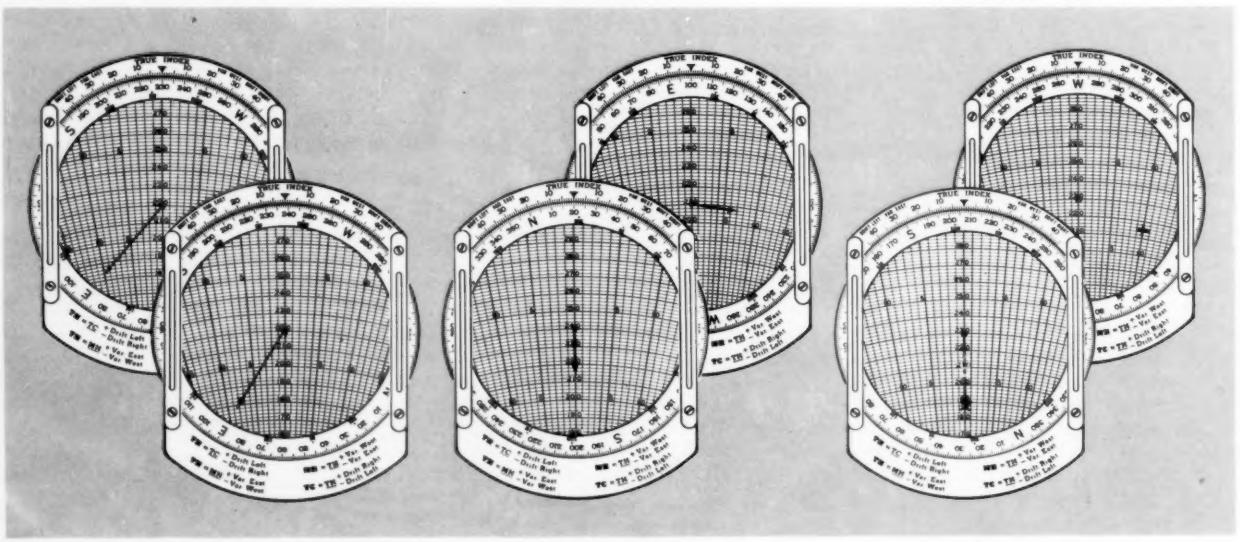
4. Find the speed circle 215 corresponding to the GS 215 mph; with your pencil, mark the intersection of the correct track line and the speed circle. The wind triangle is complete. The mark which you have made is the head of the wind vector and the head of the TC-GS vector.

5. Rotate the compass rose until the head of the wind vector is on the center line below the grommet. Read wind direction 207° under the true index.

6. Read wind velocity 42 mph on the speed scale between the grommet and the head of the wind vector.

The three wind triangle problems illustrated above are typical of the types a pilot will face in aerial navigation. Through regular practice a pilot can become proficient in the use of the computer. It will prove to be one of the most helpful navigational aids on cross country flights.

Illustration #3 Illustration #4 Illustration #5



Letters

FAA

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

● Aerial Spraying

What are the rules and regulations concerning spraying? I am a licensed private pilot and am interested in spot spraying along with several neighbors. Are there any schools that offer courses in aerial application?

Roy Baisley
Stoney Point, N. Y.

The FAA has not adopted specific regulations governing agricultural aircraft operations. In lieu of such regulations, agricultural aircraft operators normally conduct operations under a Certificate of Waiver issued by the FAA. These waivers contain special operating specifications to provide a level of safety at least equivalent to that of the regulation waived. Detailed information is available at your local General Aviation District Office.

The U. S. Department of Agriculture has two publications, How to Spray the Aircraft Way, *Farmers' Bulletin No. 2062, and* Studies of Airplane Spray-Deposit Patterns at Low Flight Levels, *Technical Bulletin No. 1110. These publications are for sale for 15 and 25 cents, respectively, at the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.*

The School of Aviation, Ohio State University, P. O. Box 3022, Columbus 10, Ohio, conducts an annual short course in aerial application. Another such school is the Agricultural Aviation Academy, Douglas County Airport, Minden, Nev.

● Parachute Jumping Regulations

What is the FAA interpretation and policy concerning parachute descents in controlled airspace? In particular, has permission been refused parachutists requesting to jump in certain controlled airspace, and under what circumstances would permission be refused? For instance, would permission be given to make a parachute descent at LaGuardia Airport?

G. R. Masterson
St. Catharines Parachute Club
St. Catharines, Ontario

Nonemergency parachute jumping is regulated by Part 105 (New), Federal Aviation Regulations. *The regulation requires, in part, that prior to jumping in controlled airspace, authorization must be obtained from, or notification be given, to an FAA air traffic facility, depending on the type of controlled airspace in which the activity will be conducted.*

Authorization from the control tower is required for jumps made in control zones. Approval or disapproval would normally be delayed until immediately prior to the jump, and would be based on possible conflict with air traffic. Therefore, in your hypothetical case of a jump at LaGuardia, or any other such airport, approval could theoretically be given, based on the above considerations, and subject to any instructions given by the tower. However, it is highly improbable that any parachuting activity would be requested or granted at a major hub such as LaGuardia, unless there were special circumstances.

● Pilot Rating Book

Could I obtain a copy of the *Pilot Rating Book,* a controlled indoctrination flight course, numbered GPO 16-335791-1?

S. G. Osborne
Fairfield Boro, N. J.

The Pilot Rating Book, *also identified by U. S. Government Printing Office number 16-33579-1, was for use in the Army Controlled Indoctrination Flight Course given under the supervision of the Civil Aeronautics Administration War Training Service. Since completion of the WTS flight training program approximately 20 years ago, this book has not been available as a GPO publication. Some flight schools, however, have since reproduced the rating sheets for their own use.*

For your information, the Private Pilot (Airplane) Flight Training Guide *is currently for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402, for $1. This publication may serve as a record of flying time for the student pilot as did the* Pilot Rating Book. *It is designed primarily, however, for the use of instructors who do not operate under a curriculum offered by a certificated pilot school.*

● North Atlantic Flights

Are there any special procedures required prior to making an overwater trip across the North Atlantic by a private pilot operating a privately owned airplane?

Arthur L. Thomas
Huntington, W. Va.

All pilots operating civil aircraft of U. S. registry over the high seas are required to comply with International Standards in Annex 2, Rules of the Air, *to the Convention on International Civil Aviation, and Section 91.1 (b) of Part 91 of the* FARs.

The prudent pilot planning extended overwater operations must consider many other essential factors such as filed flight plans, ample fuel, weather conditions compatible with piloting skills and aircraft equipment. Although regulations do not require that pilots operating under the provisions of Part 91 hold an instrument rating to conduct overwater flights, it has long been recognized that flying beyond sight of land introduces such hazards as disorientation, vertigo, and ultimate loss of control of the aircraft. The aircraft should be fully equipped for instrument flight and have aboard appropriate navigation and communications equipment.

A great deal of valuable information regarding international flights will be found in the International Flight Information Manual. *It costs $1 and is available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. The manual outlines a number of requirements that must be met if international operations are contemplated.*

● Experimental License

May an airplane with an experimental license fly at night, IFR, and carry passengers (not for hire)?

Name withheld

An experimental certificate contains limitations and restrictions applicable to the particular aircraft and operation for which it is to be used. The nature of the experimentation determines whether night operations can be authorized.

● Flying Right Seat

Can a private pilot, who has checked out and qualified to ride in the right seat of an airplane, do so while a student pilot rides in the left hand seat? Can he carry passengers while flying from the right hand seat? Also, is it legal for a private pilot, qualified in the right hand seat of a specific aircraft, to ride with another private pilot in that aircraft, while the latter is performing his minimum five takeoffs and full stop landings from the left seat as his requirements to carry passengers?

William Horrigan, Jr.
Canton, N. Y.

Nothing in the Federal Aviation Regulations *prohibits the pilot-in-command of an airplane from occupying any seat, provided the seat he occupies allows him full access to all flight controls necessary for piloting the airplane, unless another qualified certificated pilot occupies such a seat. This is not affected by the identity or pilot status of the occupant at another set of controls, nor by passengers.*

Nothing in FAR *Section 61.47 prevents a certificated pilot from occupying the second control seat, right or left, while a pilot makes the five takeoffs and landings required to meet recent piloting experience standards.*

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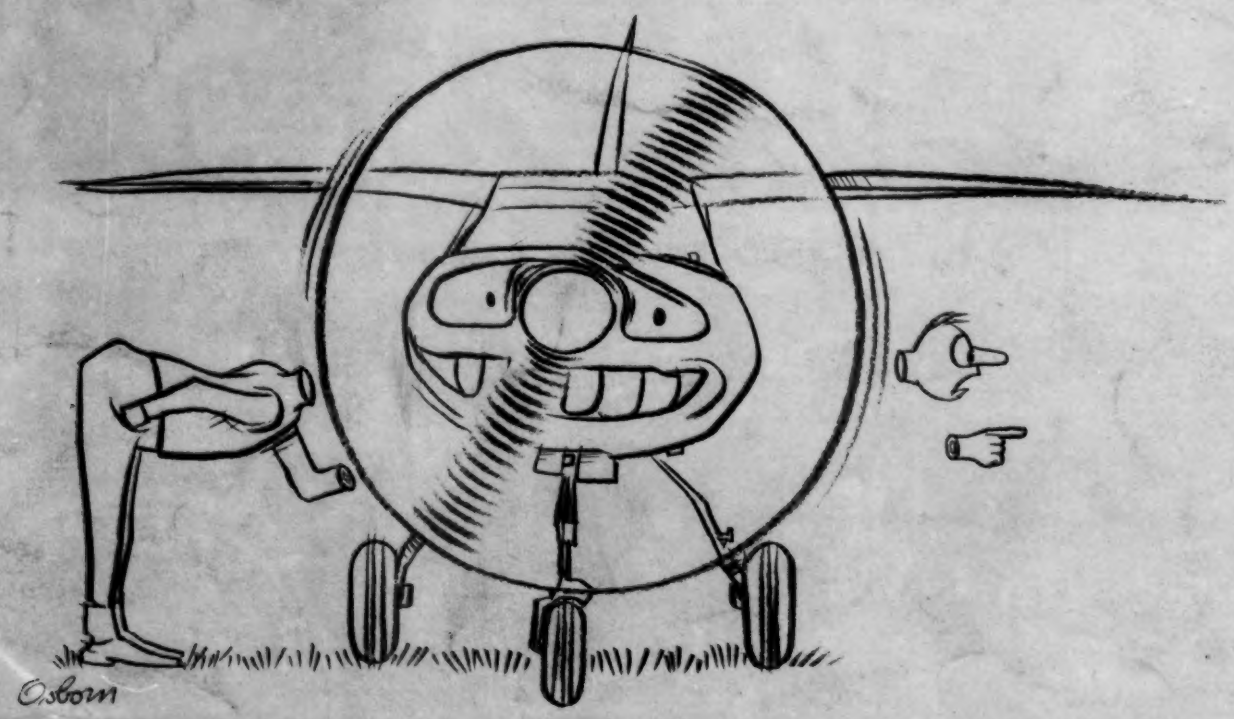
Careless pilot loses top



Snuggling near a spinning prop.